

WHAT IS CLAIMED IS:

1       A surface acoustic wave device comprising:

an input signal electrode and an output signal electrode  
to and from which an electric signal is inputted or outputted;

5       a first surface acoustic wave resonator including:

an input terminal connected to the input signal  
electrode and having a plurality of comb electrodes;

an output terminal connected to the output signal  
electrode and having a plurality of comb electrodes; and

10       common conductor means which has a plurality of comb  
electrodes and a part of comb electrodes of which form an  
interdigital transducer together with the comb electrodes of  
the input terminal, and the other part of the comb electrodes  
of which form an interdigital transducer together with the comb  
15 electrodes of the output terminal; and

a second surface acoustic wave resonator connected  
between a grounding electrode and at least one of the common  
terminals of the first surface acoustic wave resonator.

20       2.       The surface acoustic wave device according to claim  
1, wherein said common conductor means includes a plurality of  
common terminals, each having a plurality of comb electrodes,  
and a third interdigital transducer is formed by a part of the  
comb electrodes of one common terminal and a part of the comb  
25 electrodes of another common terminal.

3. The surface acoustic wave device according to claim 1, wherein the electrode period of the interdigital transducer forming the second surface acoustic wave resonator is set to be greater than the electrode period of the plurality of interdigital transducers forming the first surface acoustic wave resonator.

4. The surface acoustic wave device according to claim 1, wherein an inductance element is connected between the second surface acoustic wave resonator and the grounding electrode.

5. A surface acoustic wave device comprising:  
an input signal electrode and an output signal electrode to and from which an electric signal is inputted or outputted;  
a first surface acoustic wave resonator connected between the input signal electrode and the output signal electrode; and  
a second surface acoustic wave resonator including:  
a plurality of signal-side terminals having a plurality of comb electrodes and connected to a midpoint between the input signal electrode and the first surface acoustic wave resonator and a midpoint between the output signal electrode and the first surface acoustic wave resonator, and  
a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers in cooperate with the comb electrodes of the plurality of

signal-side common terminals and connected to a grounding electrode.

6. The surface acoustic wave device according to claim 5, wherein the electrode period of the plurality of interdigital transducers forming the second surface acoustic wave resonator is set to be greater than the electrode period of the plurality of interdigital transducers forming the first surface acoustic wave resonator.

7. The surface acoustic wave device according to claim 5, wherein an inductance element is connected between the ground-side common terminal of the second surface acoustic wave resonator and the grounding electrode.

8. A surface acoustic wave device comprising:  
an input signal electrode and an output signal electrode to and from which an electric signal is inputted or outputted;  
a plurality of first surface acoustic wave resonators connected in series between the input signal electrode and the output signal electrode; and

a second surface acoustic wave resonator including:  
a plurality of signal-side terminals having a plurality of comb electrodes and connected to a midpoint between the input signal electrode and the first surface acoustic wave

resonator, a midpoint between the output signal electrode and the first surface acoustic wave resonator, and a midpoint between adjacent ones of the first surface acoustic wave resonators, and

5                   a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers in cooperation with the comb electrodes of the plurality of signal-side common terminals and connected to a grounding electrode.

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9.     The surface acoustic wave device according to claim 8, wherein the electrode period of the plurality of interdigital transducers forming the second surface acoustic wave resonator is set to be greater than the electrode period of the plurality of interdigital transducers forming the first surface acoustic wave resonator.

10.    The surface acoustic wave device according to claim 8, wherein an inductance element is connected between the ground-side common terminal of the second surface acoustic wave resonator and the grounding electrode.

11.    A branching filter comprising:  
at least two surface acoustic wave devices having  
25 mutually different band center frequencies are mounted, and at

least one of the surface acoustic wave devices comprising:

an input signal electrode and an output signal electrode  
to and from which an electric signal is inputted or outputted;

a first surface acoustic wave resonator including:

5 an input terminal connected to the input signal  
electrode and having a plurality of comb electrodes;

an output terminal connected to the output signal  
electrode and having a plurality of comb electrodes; and

common conductor means which has a plurality of comb  
10 electrodes and a part of comb electrodes of which form an  
interdigital transducer together with the comb electrodes of  
the input terminal, and the other part of the comb electrodes  
of which form an interdigital transducer together with the comb  
electrodes of the output terminal; and

15 a second surface acoustic wave resonator connected  
between a grounding electrode and at least one of the common  
terminals of the first surface acoustic wave resonator.

12. A branching filter comprising:

20 at least two surface acoustic wave devices having  
mutually different band center frequencies are mounted, and at  
least one of the surface acoustic wave devices comprising:

an input signal electrode and an output signal electrode  
to and from which an electric signal is inputted or outputted;

25 a first surface acoustic wave resonator connected between

the input signal electrode and the output signal electrode; and

a second surface acoustic wave resonator including:

a plurality of signal-side terminals having a plurality of comb electrodes and connected to a midpoint between the input signal electrode and the third surface acoustic wave resonator and a midpoint between the output signal electrode and the third surface acoustic wave resonator, and

a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers by the comb electrodes and the comb electrodes of the plurality of signal-side common terminals and connected to a grounding electrode.

13. A branching filter comprising:

at least two surface acoustic wave devices having mutually different band center frequencies are mounted, and at least one of the surface acoustic wave devices comprising:

an input signal electrode and an output signal electrode to and from which an electric signal is inputted or outputted;

a plurality of first surface acoustic wave resonators connected in series between the input signal electrode and the output signal electrode; and

a second surface acoustic wave resonator including:

a plurality of signal-side terminals having a plurality of comb electrodes and connected to a midpoint between

the input signal electrode and the third surface acoustic wave resonator, a midpoint between the output signal electrode and the third surface acoustic wave resonator, and a midpoint between adjacent ones of the first surface acoustic wave resonators, and

a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers by the comb electrodes and the comb electrodes of the plurality of signal-side common terminals and connected to a grounding electrode.

14. The surface acoustic wave device according to claim 1, wherein an electrode period of the first interdigital transducers of the first surface acoustic wave resonator is different from an electrode period of the second interdigital transducers the first surface acoustic wave resonator.

15. The surface acoustic wave device according to claim 1, wherein an electrode period of the first interdigital transducers of the first surface acoustic wave resonator is identical to an electrode period of the second interdigital transducers of the first surface acoustic wave resonator.

16. The surface acoustic wave device according to claim 1, wherein an electrode period of the plurality of interdigital

transducers forming the first surface acoustic wave resonator is different from an electrode period of an interdigital transducer forming the second surface acoustic wave resonator.

5           17.    The surface acoustic wave device according to claim  
5, wherein an electrode period of the first interdigital  
transducers of the second surface acoustic wave resonator is  
different from an electrode period of the second interdigital  
transducers of the second surface acoustic wave resonator.

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          18.    The surface acoustic wave device according to claim  
5, wherein an electrode period of the first interdigital  
transducers of the second surface acoustic wave resonator is  
identical to an electrode period of the second interdigital  
15 transducers of the second surface acoustic wave resonator.

          19.    The surface acoustic wave device according to claim  
5, wherein an electrode period of the plurality of interdigital  
transducers forming the first surface acoustic wave resonator  
20 is different from an electrode period of an interdigital  
transducer forming the second surface acoustic wave resonator.

          20.    The surface acoustic wave device according to claim  
8, wherein an electrode period of the first interdigital  
25 transducers of the second surface acoustic wave resonator is



different from an electrode period of the second interdigital transducers of the second surface acoustic wave resonator.

21. The surface acoustic wave device according to claim  
5 8, wherein an electrode period of the first interdigital transducers of the second surface acoustic wave resonator is identical to an electrode period of the second interdigital transducers of the second surface acoustic wave resonator.

10 22. The surface acoustic wave device according to claim 8, wherein an electrode period of the plurality of interdigital transducers forming the first surface acoustic wave resonator is different from an electrode period of an interdigital transducer forming the second surface acoustic wave resonator.

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